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(54) High solids slurry polymerization

(57) An olefin polymerization process wherein monomer, diluent and catalyst are circulated in a continuous loop reactor and product slurry is recovered by means of a continuous product take off. The continuous product allows operating the reaction at significantly higher solids content in the circulating slurry. In a preferred embodiment, the slurry is heated in a flash line heater

and passed to a high pressure flash where a majority of the diluent is separated and thereafter condensed by simple heat exchange, without compression, and thereafter recycled. Also an olefin polymerization process operating at higher reactor solids by virtue of more aggressive circulation.

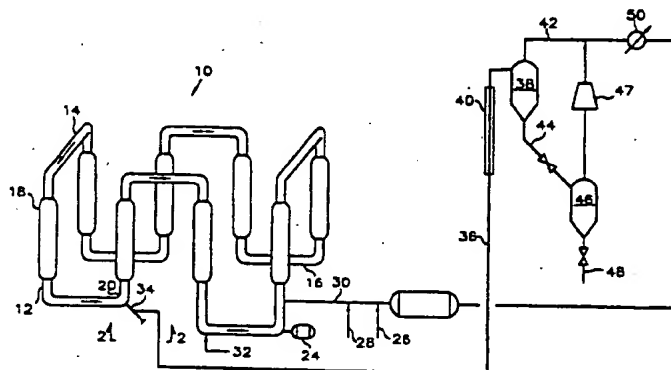


FIG. 1

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EUROPEAN SEARCH REPORT

Application Number
EP 98 11 3059

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
D,X	US 4 424 341 A (HANSON DONALD O ET AL) 3 January 1984 (1984-01-03)	20-28	C08F10/00
A	* the whole document *	1-19,29	C08F2/14
	---		B01J19/18
X	EP 0 415 427 A (PHILLIPS PETROLEUM CO) 6 March 1991 (1991-03-06)	20-28	B01J19/24
	* the whole document *		B01J4/00

X	EP 0 432 555 A (PHILLIPS PETROLEUM CO) 19 June 1991 (1991-06-19)	1,18,20,29	
	* claims; figures *		

X	US 4 613 484 A (SHERK FRED T ET AL) 23 September 1986 (1986-09-23)	20	
	* claims; figures *		

A	US 5 455 314 A (BURNS DAVID H ET AL) 3 October 1995 (1995-10-03)	1-29	
	* the whole document *		

			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			C08F B01J
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 17 September 1999	Examiner KAUMANN, E
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons</p> <p>& : member of the same patent family, corresponding document</p>			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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17-09-1999

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 4424341	A	03-01-1984	NONE	
EP 0415427	A	06-03-1991	US 5183866 A	02-02-1993
			AT 122689 T	15-06-1995
			CA 2018920 A,C	28-02-1991
			DE 69019439 D	22-06-1995
			DE 69019439 T	14-09-1995
			ES 2072340 T	16-07-1995
			HU 209740 B	28-10-1994
			JP 2701968 B	21-01-1998
			JP 3093806 A	18-04-1991
			MX 171494 B	29-10-1993
			NO 175209 B	06-06-1994
EP 0432555	A	19-06-1991	CA 2023745 A	28-05-1991
			JP 3181501 A	07-08-1991
US 4613484	A	23-09-1986	NONE	
US 5455314	A	03-10-1995	US 5565174 A	15-10-1996